



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

[Handwritten signature]

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,947	12/16/2003	Richard C. Chu	POU920030165US1	5523
46369	7590	08/09/2005		EXAMINER
HESLIN ROTHENBERG FARLEY & MESITI P.C. 5 COLUMBIA CIRCLE ALBANY, NY 12203			FITZGERALD, JOHN P	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/736,947	CHU ET AL.
	Examiner	Art Unit
	John P. Fitzgerald	2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 31 May 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-16, 21 and 22 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 21 and 22 is/are allowed.
 6) Claim(s) 1-3 and 7-11 is/are rejected.
 7) Claim(s) 4-6 and 12-14 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 16 December 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 10 and 11, filed 31 May 2005, with respect to dependent claims 4-6 and 12-16 have been fully considered and are persuasive. The previous rejection of these claims has been withdrawn.
2. Applicant's arguments filed 31 May 2005 regarding independent claims 1 and 9 have been fully considered but they are not persuasive. Applicant's main argument is focused on the combination of the Prior Art references in the rejection of the instant claims, in particular, the Clarke reference not providing any teaching to the detection of a an "increase" in fluid level. First, it must be pointed out that the instant claims 1 and 9 state: "increasing or decreasing," that is, in the alternative. Thus, if the references simply teach "decreasing" or "loss" of fluid from a cooling system/container, it reads directly on the claim. Applicant correctly points out that the Clarke reference clearly teaches a device that monitors the fluid quantity (i.e. total amount) within a storage tank. The differential pressure transducer will function, i.e. give signals regarding the liquid level within the tank regardless if the total amount of the liquid inside is increasing or decreasing. While it is true the Clarke reference is primarily concerned with fluid "losses," however, when the storage tank is replenished, the apparatus and methods disclosed by the Clarke reference will clearly indicate any changes in total volume/amount, increasing or decreasing. The capability of the Clarke apparatus to detect increases, as well as the disclosed decreases in fluid volume/amount is clearly inherent. Furthermore, the Clarke reference is classified in measurement and testing, specifically, in the monitoring of fluid levels within containers, and as such, is clearly well within the field of one having ordinary skill in the art to

consult for it pertains to the "nature of the problem to be solved." Applicant further attempts to discredit the combination of the relevant prior art references by stating that the Koizumi reference teaches a "closed liquid system" thus cannot teach upon the instant invention, nor be combined with the Clarke and Simons references. The Examiner respectfully disagrees. The Koizumi reference clearly teaches the method steps of detecting a coolant loss rate, and if so detected, further calculating if the rate of loss exceeds some predetermined/specified value, and if so, the signaling or stopping of the pump as well as a system shut down (see Figs. 8 and 9). Furthermore, the Simons and Clarke reference clearly teaches a closed loop systems, since the tank/container can be replenished. Once again, the combination of the cited references clearly teach and are able to measure/test for an "increase" in fluid flow/rate/volume is clearly well within the skill level of one having ordinary skill in the art.

3. Furthermore, in response to applicant's argument that the references must explicitly provide a suggestion for combining, a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference (see *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)), with skill being presumed on the part of the artisan, rather than the lack thereof (see *In re Sovish* 769 F.2d 738, 742, 226 USPQ 771, 774 (Fed. Cir. 1985)); further, references may be combined although none of them explicitly suggests combining one with the other (see *In re Nilssen* 7 USPQ2d 1500 (Fed. Cir. 1989)). It has long been the law that the motivation to combine need not be found in prior art references, but equally can be found "in the knowledge generally available to one of ordinary skill in the art." *In re Jones*, 958 F.2d 347, 351 (Fed. Cir. 1992) (citing *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988)). The motivation to

combine can be found either in a prior art reference, or it can be implicit in the knowledge of one of ordinary skill in the art. See *In re Huston*, 308 F.3d 1267, 1280 (Fed. Cir. 2002); *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1472 (Fed. Cir. 1997). Sources suggesting a combination may be: (1) the combined teachings of the prior art, (2) the knowledge of the ordinary practitioner and (3) the nature of the problem to be solved. "The test for implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). In *Richard Ruiz and Foundation Anchoring Systems, Inc. v. A.B. Chance Company*, No. 03-1333 (Fed. Cir. January 29, 2004), the court emphasized that an "express written teaching in the art" to combine references **was not required** (emphasis added). Rather, motivation may come from "the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem." Please further note the following from Section 2144 of the MPEP: "The rationale to modify or combine the prior art does not have to be expressly stated in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent...The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem...It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by Applicant." Also Chief Judge Nies writes in a concurring opinion, "While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or the prior art specifically suggest making the combination...In sum, it is off the mark

for litigants to argue, as many do, that an invention cannot be held to have been obvious unless a suggestion to combine prior art teachings is found in a specific reference". See *In re Oetiker* 977 F.2d 1443, 24 USPQ.2d 1443 (Fed.Cir.1992).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-3 and 7-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's disclosed Prior Art document "The Evolution of IBM High Performance Cooling Technology" by Simons (hereinafter Simons), US 5,245,869 to Clarke et al. (hereinafter Clarke) and US 5,323,847 to Koizumi et al. (hereinafter Koizumi). Simons discloses various apparatus/system and methods of monitoring coolant with a cooling systems, including closed loop (as recited in claims 3, 11, 22) water cooled systems (Section IV) (Fig. 16) which circulate and control the temperature of cooling water with a cooling distribution unit (CDU) including the elements of heat exchangers, temperature controllers, pumps, expansion tanks and water supply/return manifolds and the importance of all these elements to function properly and provide uninterrupted operation ensuring adequate cooling levels. Simons fails to disclose monitoring the coolant employing at least one pressure transducer to obtain multiple pressure measurements related to an amount of coolant within the expansion tank, determining a rate of volume change of coolant with the expansion tank employing the multiple pressure measurements (as recited in claims 1 and 9); the measurements being successive pressure measurements at known time intervals and related to the amount of coolant in the expansion

tank, thus determining the rate of volume change of the coolant with the expansion tank (as recited in claims 2 and 10); and wherein the pressure transducers are differential pressure transducers (as recited in claims 7, 8, 15 and 16). Clarke teaches a method of monitoring the amount (i.e. level) of liquid within a tank (Figs. 1-5) employing a differential pressure transducer (12) monitoring the amount of fluid above the transducer which is located at the bottom of the tank, making pressure measurements to determine an amount in the tank and a “loss rate” for leak detection (i.e. measurements over time periods, iterations) (Clarke: col. 5, lines 5-10 and col. 7, lines 30-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ pressure transducers to monitor the amount of coolant in the tank and all the recited method steps, as taught by Clarke, modifying the method of monitoring coolant within a cooling system disclosed by Simons, thus providing a high resolution and highly accurate sensor and system for monitoring the amount of coolant in the tank for safe, uninterrupted operation of the cooling system (Clarke: col. 1, lines 37-40).

Simons and Clarke do not expressly disclose the employment of determining an immediacy of action to be taken to service the cooling system based on the rate of volume change (i.e. increasing as well as decreasing) within the expansion tank (as recited in claims 3, 11 and 19); and the employment of specific leak rate set points/thresholds that are exceeded or fall below particular levels of coolant within the coolant tank and the automatic determination and immediacy of action to be taken (i.e. service or shut-down) (as recited in claims 1 and 9). Koizumi teaches the monitoring of coolant levels for the cooling of an electronic apparatus (Figs. 1-14) wherein the amount (i.e. liquid/water/coolant level) is monitored at particular set points and thus actions (i.e. alarms/indicators) are actuated to inform an operator to take necessary

action such as stopping the operation of the electronic unit or inspecting the coolant (see Fig. 8 below) (Koizumi: cols. 8-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ limits/set-points to indicate immediacy of action to an operator and other obvious variants as recited in the instant claims, as taught by Koizumi, thus modifying the monitoring of coolant with a cooling system disclosed by Simons and Clarke, thus providing protection means alerting an operator to shut down the electronic unit associated with the cooling system.

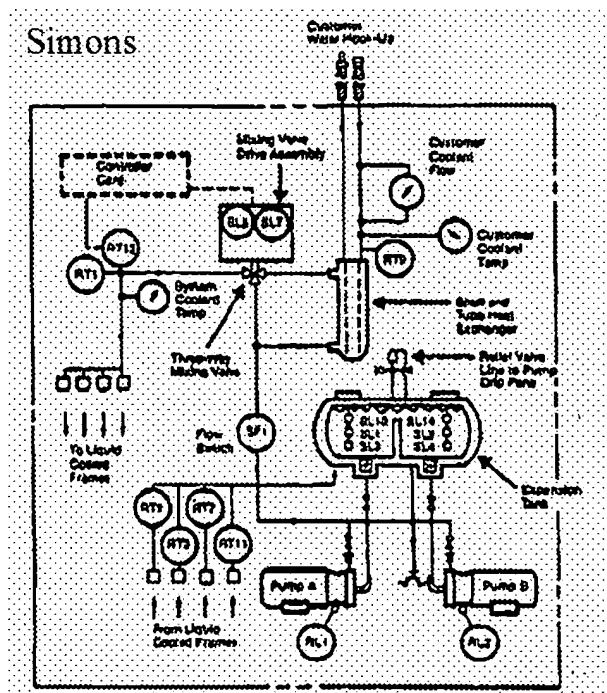


Fig. 16. Flow schematic of a typical IBM coolant distribution unit (CDU).

Clarke et al.

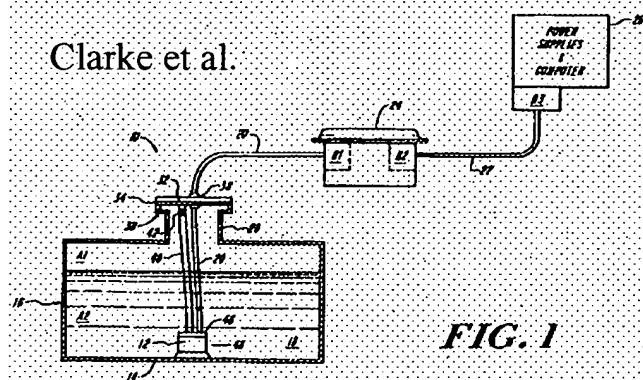


FIG. 1

Koizumi et al.

FIG. 8

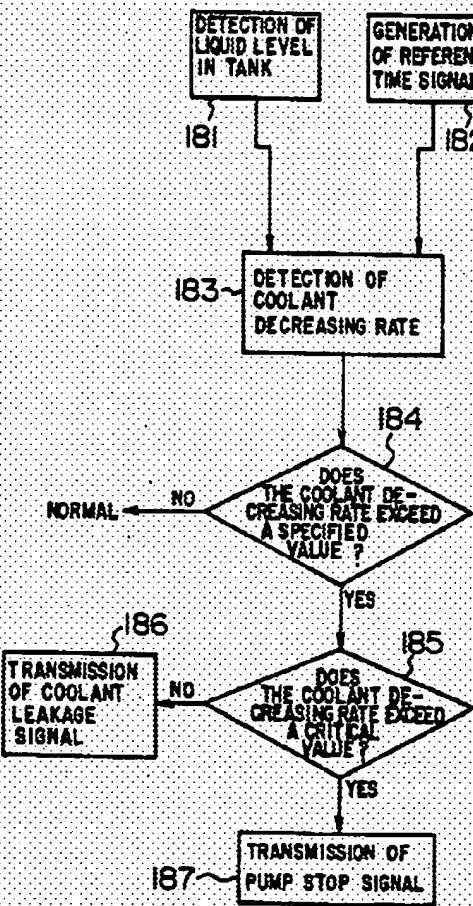
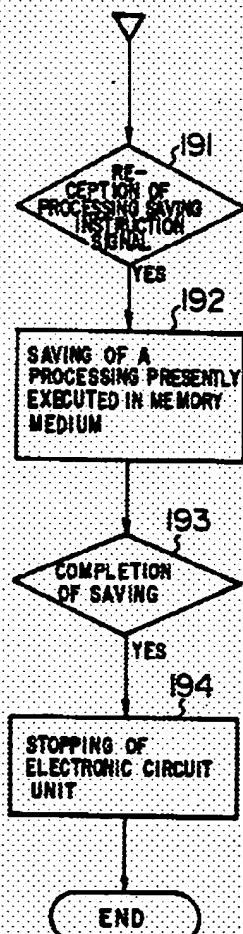


FIG. 9



Allowable Subject Matter

1. Claims 21 and 22 are allowed over the Prior Art of record.
2. Claims 4-6 and 12-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

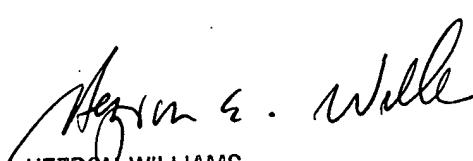
3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is invited to review Prior Art cited on PTO 892 form accompanying this office action for relevant references to the instant invention.
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Fitzgerald whose telephone number is (571) 272-2843. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JF

08/08/2005



Herzon S. Williams
HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800